

WHAT IS CLAIMED IS:

1. A method of preparing an antigen presenting cell specific to an antigen, said method comprising:
 - 5 (a) providing a human monocyte or monocyte-related cell;
 - (b) increasing the level of a 4-1BBL in said monocyte or monocyte-related cell;
 - (c) increasing the level of a B7 molecule in said monocyte or monocyte-related cell;
 - 10 (d) contacting said monocyte or monocyte-related cell with said antigen or a part thereof; and
 - (e) culturing said monocyte or monocyte-related cell for less than 1 week thereby to allow its conversion to an antigen presenting cell.
- 15 2. The method of claim 1, wherein said level of a 4-1BBL is increased by introducing into said monocyte or monocyte-related cell a nucleic acid encoding said 4-1BBL.
- 20 3. The method of claim 2, wherein said nucleic acid is introduced into said monocyte by introducing into said monocyte a vector comprising said nucleic acid.
4. The method of claim 3, wherein said vector is a viral
25 vector.
5. The method of claim 4, wherein said vector is an adenovirus.
- 30 6. The method of claim 1, wherein said level of a B7 molecule is increased by introducing into said monocyte or monocyte-related cell a nucleic acid encoding said B7 molecule.

7. The method of claim 6, wherein said nucleic acid is introduced into said monocyte by introducing into said monocyte a vector comprising said nucleic acid.

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8. The method of claim 7, wherein said vector is a viral vector.

9. The method of claim 8, wherein said vector is an adenovirus.

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10. The method of claim 2, wherein said level of a B7 molecule is increased by introducing into said monocyte or monocyte-related cell a nucleic acid encoding said B7 molecule.

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11. The method of claim 10, wherein said nucleic acid encoding said 4-1BBL is introduced into said monocyte or monocyte-related cell by introducing into said monocyte or monocyte-related cell a vector comprising said nucleic acid encoding said 4-1BBL, and wherein said nucleic acid encoding said B7 molecule is introduced into said monocyte or monocyte-related cell by introducing into said monocyte or monocyte-related cell a vector comprising said nucleic acid encoding said B7 molecule.

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12. The method of claim 11, wherein said vector comprising said nucleic acid encoding said 41BBL and said vector comprising said nucleic acid encoding said B7 molecule are each independently a viral vector.

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13. The method of claim 4, wherein said viral vector is an adenovirus.

14. The method of claim 1, wherein said method further comprises contacting said T cell with a TNF ligand.
- 5 15. The method of claim 14, wherein said TNF ligand is selected from the group consisting of OX40L, LIGHT, CD70, CD30 and GITR-L.
16. The method of claim 1, wherein said culturing step (e)
10 has a duration of less than about 72 hours.
17. The method of claim 16, wherein said culturing step (e) has a duration of less than about 48 hours.
- 15 18. The method of claim 17, wherein said culturing step (e) has a duration of less than about 24 hours.
19. The method of claim 18, wherein said culturing step (e) has a duration of less than about 16 hours.
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20. The method of claim 19, wherein said culturing step (e) has a duration of about 12 to about 16 hours.
21. The method of claim 1, wherein said antigen or part
25 thereof is selected from a virus, a protein and a polypeptide.
22. The method of claim 21, wherein said protein or polypeptide is contacted with said monocyte or monocyte-related cell by introducing into said monocyte or
30 monocyte-related cell a nucleic acid capable of encoding said protein or said polypeptide.

23. An antigen presenting cell produced by the method of claim 10, wherein said antigen presenting cell comprises:
- (a) a recombinant vector comprising said nucleic acid encoding said 41BBL; and
 - 5 (b) a recombinant vector comprising said nucleic acid encoding said B7 molecule.
24. The antigen presenting cell of claim 24, wherein the same vector comprises both said nucleic acid encoding said
- 10 41BBL and said nucleic acid encoding said B7 molecule.
25. A composition comprising the antigen presenting cell of claim 23 and a pharmaceutically acceptable carrier.
- 15 26. A vaccine comprising the antigen presenting cell of claim 23.
27. A method of activating a human T cell, said method comprising contacting said T cell with the antigen
- 20 presenting cell of claim 23.
28. The method of claim 27, wherein said contacting step is carried out *ex vivo*.
- 25 29. The method of claim 27, wherein said contacting step is carried out *in vivo* and said antigen presenting cell is administered to a subject comprising said human T cell.
30. The method of claim 27, wherein said human T cell is
- 30 obtained from a subject suffering from a condition associated with immuno impairment.

31. The method of claim 30, wherein said condition is selected from the group consisting of viral disease, pathogen infection and cancer.

5 32. The method of claim 31, wherein said viral disease is selected from the group consisting of AIDS, hepatitis C, and CMV-related disease.

10 33. The method of claim 31, wherein said pathogen is selected from the group consisting of a bacteria, a fungus and a parasite.

15 34. A method of treating a subject suffering from a condition associated with immuno impairment, said method comprising administering to said subject the antigen presenting cell of claim 23.

20 35. A method of vaccinating a subject, said method comprising administering to said subject the antigen presenting cell of claim 23.

25 36. A method of treating a subject suffering from a condition associated with immuno impairment, said method comprising administering to said subject an activated T cell of claim prepared by the method of claim 27.

37. The method of claim 1, wherein said B7 molecule is selected from the group consisting of B7.1 and B7.2.